ABSTRACT

A frequency domain based method using matrix rank reduction for removing noise from seismic data sets is provided using a variety of 3D eigen filtering techniques. A rank reduced grid of traces or proxy cube that is representative of an original grid of Traces, but that has a better signal to noise ratio results since the surviving data elements represent the bulk of the composite signal related to genuine reflectors - whereas the trivial elements replace a large portion of the composite signal related to random noise. There is no compression of the elements of the representative matrices. The use of a series of proxy cubes in place of the co-ordinate pair related original CUBEs of seismic data results in several advantages including reduced processing time and better accuracy at the boundaries of the subject section.